CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 01-101

SITE CLEANUP REQUIREMENTS FOR:

ZENECA INC.
1415 SOUTH 47th STREET
RICHMOND, CONTRA COSTA COUNTY

MEADE STREET OPERABLE UNIT
SUBUNIT 1

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board), finds that:

SITE LOCATION AND OWNER

1. Site location: The Zeneca Inc. (Zeneca) site is located at 1200 and 1415 South 47th Street in Richmond, south of Interstate 580, and along the San Francisco Bay shoreline in Richmond, California (refer to Figure 1). The site is bound by industrial areas to the north, east, and west, and by open space and Eastern Stege Marsh to the south. To the south of the site is East Bay Regional Park District's Bay Trail. The Zeneca site, and the adjacent University of California Richmond Field Station (UCRFS) site, and portions of the adjacent Eastern and Western Stege Marsh comprise the area designated as the Meade Street Operable Unit (refer to Figure 2).

2. Site owner: The Zeneca site was formerly owned by the Stauffer Chemical Company (Stauffer), which utilized the site to manufacture industrial and agricultural chemicals. Sulfuric acid was manufactured from approximately 1897 to 1970. Several smaller companies occupied parcels at the site prior to and during Stauffer's ownership of the land. Stauffer acquired all of the parcels on which these companies operated by 1949. After 1985, Stauffer was acquired and divested by a number of companies, the last being, Zeneca's predecessor company, ICI Americas, which acquired the site in 1987. Zeneca is liable for releases originating at the site by it or its predecessors in interest and is hereinafter named as the discharger.

PURPOSE OF ORDER

3. Site Cleanup Requirements: This order prescribes Site Cleanup Requirements (SCRs) for Subunit 1 of the Meade Street Operable Unit, which consists of the Zeneca site and a portion of the adjacent Stege Marsh. The order includes general provisions and tasks necessary to contain and remediate soil and groundwater pollution at the site and is being issued pursuant to Section 13304 of the California Water Code.

4. Implementation of remedial measures: This order requires additional technical evaluation and implementation of the remedial measures proposed for Subunit 1 of MSOU, including the uplands area and areas adjacent to Eastern Stege Marsh, and requires that the impacts to Eastern Stege Marsh be addressed. The discharger submitted a Conceptual Remediation and Risk Management Plan (CRRMP) on November 15, 2000 which proposes site screening criteria, evaluates exposure of human and ecological receptors to impacted soil and groundwater at the site, and proposes remedial actions and risk management practices to eliminate or significantly reduce the potential for exposure of human or ecological receptors to impacted soil and groundwater.

5. Coordinated cleanup: This order, in conjunction with Site Cleanup Requirements for the adjacent University of California Richmond Field Station (UCRFS) site, located immediately to the west, comprise a coordinated plan which addresses impacts to upland areas and wetland areas of both the Zeneca site and the UCRFS site.

SITE HISTORY

6. Site use: The site was first developed in 1897 when Stauffer built a plant for the manufacture of sulfuric acid. Additional facilities were added by Stauffer and others to manufacture nitric acid, phosphate fertilizer, carbon disulfide, aluminum sulfate, ferric sulfate, titanium trichloride, and a number of herbicides, insecticides, and fungicides. Activated carbon gas masks were also produced on-site. Zeneca ceased using pyrite ore in the production of sulfuric acid in 1962 and ceased production of sulfuric acid altogether in 1970. Zeneca ceased production of agricultural products in 1997. The Western Research Center (WRC) portion of the site is currently used by Zeneca for research, office space, and open space, while the remaining areas are largely unoccupied, the former manufacturing facilities having been largely demolished.

7. Pyrite cinders: From approximately 1919 to 1962, pyrite ores were roasted at the southwestern portion of the former Plant Area. The ores contained primarily pyrite (FeS_2), and lesser amounts of chalcopyrite ($CuFeS_2$), sphalerite (ZnS), and

magnetite (Fe_3O_4). Various other metals, such as arsenic and lead, are also commonly associated with pyrite ore. After processing, spent pyrite ore (pyrite cinders) was placed as fill, primarily within the southern portions of the Plant Area and the unimproved uplands and marsh areas. Pyrite cinders were also deposited in areas of the adjacent UC Richmond Field Station site.

8. Surface impoundment: An Ag-Yard pond was constructed in 1972 and was closed in 1991. The pond was a lined impoundment that covered 3,429 square feet and was up to 9 feet deep. The pond contained surface runoff from the agricultural chemical processing area and received wastewater generated by a groundwater interception trench and a recovery well. Wastewater was transported from the pond to an on-site wastewater treatment system after treatment and was discharged to a municipal sanitary sewer.

REGULATORY STATUS

9. Site Cleanup Requirements, Order 91-010, required closure of the Ag-Yard pond and groundwater monitoring. Order No. 92-055 rescinded Order No. 91-010 based upon the submittal of a report certifying closure of the Ag-Yard pond.

OPERABLE UNITS AND DISCHARGERS NAMED

10. Operable Unit/Subunit structure: The area containing the Zeneca and the adjacent UCRFS sites and their groundwater pollution plumes is referred to as the Meade Street Operable Unit (MSOU). The MSOU has been subdivided into two subunits: Subunit 1 consists of the area of the Zeneca site and the adjacent portion of Eastern Stege Marsh; Subunit 2 consists of the UCRFS site and the adjacent portion of Western Stege Marsh. The boundaries of Subunit 2 are shown in Figure 2. Subunit 2 is further subdivided into Subunits 2A and 2B. Subunit 2A consists of the cinder fill area located in the southeastern portion of the upland area of the site and the eastern portion of the Western Stege Marsh. Subunit 2B consists of the remainder of the upland portion of the UCRFS site and the western portion of Western Stege Marsh.

11. Discharger named: Zeneca (or its predecessors in interest), a confirmed source of pollution within Subunit 1 of MSOU, is the discharger named responsible for addressing pollution in Subunit 1. Zeneca is wholly responsible for addressing pollution in Subunit 1 and complying with the requirements of this Order.

12. Future modification of order: As additional information is generated in the MSOU and its subunits, the Board may modify the dischargers named in this order.

SITE DESCRIPTION

13. General layout of site: Subunit 1 of the MSOU comprises approximately 86 acres and is relatively flat. The site consists of three main areas: the former Plant Area, the Western Research Center (WRC), and the unimproved upland and marsh areas extending south of the former plant area and extending to the Bay Trail embankment. (refer to Figure 2).

14. Plant Area: The Plant Area, consisting of approximately 31 acres, is located on the western and central portions of Subunit 1. Existing structures in the area of the former manufacturing plant include above-ground storage tanks, office buildings, maintenance buildings, warehouses, research laboratories, and greenhouses. Also located within the Plant Area are the closed agricultural pond and an associated interception trench, cinder fill areas, and a wastewater treatment system.

15. Western Research Center: The Western Research Center (WRC), consisting of approximately 20 acres, is located on the northern portion of Subunit 1. Existing structures in the WRC include laboratories, greenhouses, offices, storage buildings, and rail lines.

16. Unimproved upland and Eastern Stege Marsh: The unimproved uplands and marshland areas south of the Plant Area and north of the Bay Trail consists of approximately 35 acres. The area includes the eastern portion of Stege Marsh, two freshwater lagoons, four surge ponds, and cinder landfill areas. Stege Marsh is an intertidal salt marsh bounded by embankments on all sides. The lagoons are freshwater ponds vegetated by willows and cattails, and were formerly utilized by Zeneca as evaporation ponds. The four surge ponds, which drain to Eastern Stege Marsh, are lined and utilized by Zeneca for wastewater and stormwater management.

SITE GEOLOGIC AND HYDROGEOLOGIC SETTING

17. General geology: The Subunit 1 site geology consists primarily of alluvial sediments that were deposited at the site from the Berkeley Hills, located east and northeast of the facility. The hydrogeologic evaluations indicate that the sediments in the upper 80 to 100 feet beneath the facility can be subdivided into four units: fill, Bay Sediments, Quaternary Alluvium, and Yerba Buena mud. Fill material consists of pyrite cinders utilized from the sulfuric acid production process, alum mud, and construction debris, and ranges from zero to approximately 15 feet thick, with deeper cinders in localized areas of the site. Fill is generally thicker in the southern part of the facility adjacent to the San Francisco Bay. Bay Sediments are in the southern portion of the site, south of the historical San Francisco Bay shoreline. The sediments are primarily composed by

fine-grained silty sand with smaller amounts of mud and peat, and range from approximately 5 feet to 9 feet thick. Beneath the Bay Sediments lie Quaternary Alluvium, which consists of interbedded gravel, sand, silt, and clay units. The Quaternary Alluvium ranges from approximately 3 to 11 feet thick. Within the Quaternary Alluvium are upper and lower water bearing units; an aquitard has not been consistently observed between the units. The lowermost layer observed is the Yerba Buena Mud. The Yerba Buena Mud is laterally extensive and is approximately 40-50 feet thick. The top of the Yerba Buena Mud is present at depths of approximately 25-30 feet below ground surface in the northern portion of the site, and at approximately 35-45 below groundwater surface in the southern portion of the site.

18. Hydrogeology: Two hydrogeologic units have been identified at the site: the water-bearing sand and gravel in the Upper Horizon, and the water bearing sand and gravel in the Lower Horizon. The Upper Horizon is typically found ranging from approximately 10 to 20 feet below ground surface. The sand and gravel units in the Upper Horizon appears to be mostly continuous laterally across the site. The Lower Horizon is encountered above the Yerba Buena Mud at depths ranging from approximately 25 to 40 feet below ground surface. The sand and gravel units in the Lower Horizon vary in thickness from less than 2 feet thick to 8 feet thick. Groundwater within the Upper Horizon and the Lower Horizon generally flows south to southwesterly toward the Bay, and has a relatively low gradient. The groundwater deeper than approximately 25 feet below ground surface is considered a potential drinking water source. The primary sources of recharge to the shallow groundwater units are through direct infiltration of on-site precipitation and in upgradient areas, and tidal seepage from the Bay.

SOIL AND GROUNDWATER CONTAMINATION

19. Releases at Zeneca site: Extensive sampling was conducted on-site in order to evaluate soil and groundwater impacts associated with operations on-site. The sampling and site history data indicate that the most significant soil and groundwater contamination at the site was caused by releases at the Western Research Center (primarily south of East Montgomery Street) and the former Plant Area, and from the use of pyrite cinders as fill material. The most significant chemical concentrations detected in soil and groundwater reflect historic site and chemical use and storage practices.

20. Soil in Uplands Area: Investigations indicate that some of the pyrite cinders used as fill in Subunit 1 have oxidized, resulting in pH levels as low as 3.3 in soil. Investigations also indicate elevated concentrations of metals in soil, including arsenic (maximum 1,700 ppm; mean 33 ppm) and lead (maximum 18,000 ppm;

mean 205 ppm). Volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) were detected in soil on-site, including benzene (maximum 1.7 ppm; mean .28 ppm), toluene (maximum 1,800 ppm; mean 12 ppm) and benzopyrene (maximum 6 ppm; mean 0.9 ppm). Pesticides detected in soil on-site include DDD (maximum 2,800 ppm; mean 27 ppm), DDT (maximum 2,100 ppm; mean 14 ppm), and toxaphene (maximum 230 ppm; mean 31 ppm).

21. Groundwater in Uplands Area: Groundwater sampling indicates that oxidation of pyrite cinders has resulted in pH levels in groundwater as low as 3.2. The low pH conditions have caused metals to leach from pyrite cinders. Elevated metals concentrations in groundwater include: arsenic (maximum 45,000 ppb; mean 148 ppb), copper (maximum 380,000 ppb; mean 4,164 ppb), mercury (maximum 8.7 ppb; mean 23 ppb), nickel (maximum 5,400 ppb; mean 455 ppb), selenium (maximum 880 ppb, mean 15 ppb), and zinc (maximum 280,000 ppb, mean 9, 426 ppb). Elevated VOCs detected in groundwater include: 1, 1, 2, 2-tetrachloroethane (maximum 120 ppb; mean 59 ppb), 1, 1-dichlorobenzene (maximum 4,800 ppb; mean 127 ppb), carbon disulfide (maximum 1,800,000 ppb; mean 29,245 ppb), chlorobenzene (maximum 75,000; 667 ppb mean), chloroform (maximum 3,400 ppb; mean 97 ppb), cis-1,2-dichloroethene (maximum 880 ppb; mean 76), tetrachloroethene (maximum 540 ppb; mean 83 ppb), trichloroethene (maximum 4,900 ppb; mean 188 ppb), and vinyl chloride (maximum 54 ppb; mean 2.7 ppb). Pesticides detected in groundwater include: DDD (maximum 63 ppb; mean 2 ppb), DDT (maximum 19 ppb; mean 0.95 ppb), cycloate (maximum 760 ppb; mean 11 ppb), molinate (maximum 6,300 ppb; mean 78 ppb), and metamsodium (maximum 480,000 ppb; mean 8,012).

22. Stege Marsh impacts: A portion of Stege Marsh within Subunit 1 has been impacted by releases on Subunit 1 and the placement of pyrite cinders as fill in the adjacent Western Research Area, Plant Area, and the undeveloped upland and marsh areas. The benthic community of the marsh has been significantly impaired by the low pH conditions, metals, PCBs and pesticides detected in sediment samples. Metals include: arsenic (maximum 771 ppm; mean 186 ppm), copper (maximum 5390 ppm; mean 542 ppm), lead (maximum 818 ppm; 165 ppm), mercury (maximum 72.5 ppm; mean 9 ppm), nickel (maximum 115 ppm; mean 51 ppm), silver (maximum 26 ppm; mean 1.75ppm), and zinc (maximum 6,210 ppm; mean 1,318 ppm). Pesticides detected in marsh sediment include: DDD (maximum 1.8 ppm; mean 0.29 ppm), DDT (maximum 0.54 ppm; mean 0.25 ppm), and PCBs (maximum 0.8 ppm; mean 0.22 ppm). The chemicals detected in Stege Marsh reflect historic site and chemical use and may reflect additional sources beyond the area of Subunit 1.

23. Impacts at UCRFS site from use of Zeneca's pyrite cinders as fill: The adjacent University of California Richmond Field Station (UCRFS) site has been significantly impacted by the use of pyrite cinders previously generated at the Zeneca site and used as fill at the UCRFS site. The thickness of the cinder fill at the UCRFS site is up to 15 feet thick. As observed at the Zeneca site, oxidation of sulfur associated with spent cinders has resulted in low pH conditions and elevated metals in soil and groundwater at the UCRFS site and in the adjacent Stege Marsh. The UCRFS site has also been impacted by releases associated with historic operations at the UCRFS site.

24. Remediation of Upland Area: Zeneca's November 15, 2000 Conceptual Remediation and Risk Management Plan (CRRMP) proposes remedial measures for addressing soil, sediment, and groundwater pollution in the Upland Area of Subunit 1. The report identifies Chemicals of Potential Concern (COPCs) and identifies potential human and ecological receptors and exposure pathways in the Upland Area. The CCRMP also proposes cleanup levels (Site Specific Target Levels (SSTLs, for VOCs based on protection of indoor onsite workers) and evaluates remedial measures for achieving the cleanup levels. Remedial measures proposed for the Upland Area of the site include localized excavation, groundwater extraction and treatment, installation of a partial site cap, neutralization of cinders and groundwater, installation of a biologically active permeable barrier, and restoration of freshwater lagoons. Long term soil management plans, site maintenance plans, and deed restrictions are also proposed. Similar remedial measures are currently being considered for addressing cinders in Subunit 2A and other areas of the Zeneca site either in-place or after consolidation on Subunit1. Other alternatives evaluated included groundwater extraction and treatment and excavation and offsite disposal of cinders and affected soil. The alternatives were compared on the basis of potential effectiveness and reliability, practicality of implementation, and cost effectiveness. Staff conditionally approved the CRRMP on April 4, 2001. One of the conditions of approval was that additional remedial investigation sampling data which defines the full extent of the soil and groundwater impacts at the site would be submitted.

25. Risk assessment for Upland Area: COCs detected in soil and groundwater include carcinogenic and non-carcinogenic compounds at levels which may affect human and ecological receptors if unmitigated. In order to prevent unacceptable levels of exposure to human and ecologic receptors, an assessment of the uplands area of the site was performed in order to identify pathways of exposure assuming future commercial/industrial site use, and to establish SSTLs protective of human receptors. Potentially complete exposure scenarios for human receptors include

direct dermal contact, ingestion of impacted soil or groundwater, and inhalation of air-born particulates or VOCs.

For comparison, the Board considers the following risks to be acceptable at remediation sites: a hazard index of 1.0 or less for non-carcinogens, and an excess cancer risk of 10^{-5} or less for carcinogens.

Due to excessive risk that will be present in the uplands area of the site pending full remediation, institutional constraints are appropriate to limit on-site exposure to acceptable levels. Institutional constraints include a deed restriction that notifies future owners of subsurface contamination, and requires best management practices for preventing unacceptable levels of exposure to subsurface contamination, including prohibition of the use of shallow groundwater beneath the site as a source of drinking water until cleanup standards are met.

26. Pending remediation of Eastern Stege Marsh: Although it is expected that the remedial measures for the uplands area of Subunit 1 will reduce the flux of contamination from the uplands area into Eastern Stege Marsh, a risk assessment needs to be conducted and remedial measures need to be proposed and implemented specifically for the marsh areas of Subunit 1. Remedial measures for the Eastern Stege Marsh are required in Task 3.a through 3.f of this order. The remedial measures must reduce the potential for ecological and human exposure to chemicals in the marsh and enhance the existing tidal marsh habitat.

27. Basis for Cleanup Standards

a. State Board Resolution No. 68-16: State Board Resolution No 68.16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," applies to this discharge and requires attainment of background levels of water quality, or the highest levels of water quality which is reasonable if background levels of water quality cannot be restored. Cleanup levels other than background must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial uses of such water, and not result in exceedance of applicable water quality objectives. The previously-cited cleanup plan indicates that restoration of water quality to background levels is not necessary to protect beneficial use of groundwater at the site and potential site receptors. This order and its requirements are consistent with Resolution No. 68-16.

b. State Board Resolution No. 92-49: State Board Resolution No. 92-49, "Policies and procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304," applies to this discharge.

This order and its requirements are consistent with the provisions of Resolution No. 92-49 as amended.

c. Board Resolution 89-39: Board Resolution No. 89-39, "Sources of Drinking Water," defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas of high TDS, low yield, or naturally-high contaminant levels. Based on site investigations, groundwater within the upper aquifer zone is brackish and is therefore not considered a potential source of drinking water. However, the deeper aquifers beneath the site are not brackish and are therefore considered a potential source of drinking water.

d. Beneficial uses as specified in the Basin Plan: The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin Plan (Basin Plan) on June 21, 1995. This updated and consolidated plan represents the Board's master water quality control planning document. The revised Basin Plan was approved by the State Water Resources Control Board and the Office of Administrative Law on July 20, 1995, and November 13, 1995, respectively. A summary of regulatory provisions is contained in Title 23, California Code of Regulations, Section 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwaters.

The beneficial uses of San Francisco Bay include:

a. wildlife habitat;
b. navigation;
c. water contact recreation;
d. non-contact water recreation;
e. commercial and sport fishing;
f. preservation of rare and endangered species;
g. estuarine habitat;
h. fish migration;
i. fish habitat;
j. industrial service supply; and
k. shellfish harvesting.

The existing and potential beneficial uses for Stege Marsh include:

a. estuarine habitat
b. preservation of rare and endangered species
c. water contact recreation
d. noncontact water recreation
e. fish spawning
f. wildlife habitat

The existing and potential beneficial uses for groundwater in the vicinity of Subunit 1 include:

a. municipal and domestic water supply
b. industrial process water supply
c. industrial service water supply
d. agricultural water supply
e. freshwater replenishment to surface water

e. Site Specific Target Levels: In the Conceptual Remediation and Risk Management Plan (CCRMP), Site Specific Target Levels (SSTLs) were developed for volatile chemicals of concern in the Uplands Area of the site, as described in Findings 24 and 25. It was determined in the CCRMP that soil and groundwater concentrations at or below SSTLs would not present a hazard to potential human receptors within the Upland Area of the site. SSTLs have not yet been developed for Stege Marsh.

f. Soil, groundwater, and marshland cleanup standards: The soil and groundwater cleanup standards for the Upland Areas of the site are the SSTLs, modified industrial PRGs, and ERMs identified in the CRRMP. Cleanup to these levels and mitigation or elimination of exposure pathways through proposed remedial measures is protective of beneficial uses of groundwater and will result in acceptable residual risk to potential human and ecological receptors in the Upland Area. Cleanup standards for Eastern Stege Marsh will be established upon completion of the applicable tasks of this Order.

g. Future Changes to Cleanup Standards: The goal of this remedial action is to restore the beneficial uses of groundwater underlying and adjacent to the site. Results of cleanup at other sites suggest that full restoration of beneficial uses to groundwater as a result of active remediation at this site may not be possible. If full restoration of beneficial uses is not technologically nor economically achievable within a reasonable period of time, then the discharger may request modification of the cleanup standards or establishment of a containment zone, a limited groundwater pollution zone where water quality objectives are exceeded. Conversely, if new technical information indicates that cleanup standards can be surpassed, the Board may decide that further cleanup action should be taken. Cleanup standards will also be reassessed if residential land use is proposed for the Upland Area in the future and as warranted by additional site data.

MONITORING PROGRAMS

28. Groundwater Monitoring – 22 groundwater monitoring wells are located throughout the site (H-10, H-14, H-24, H-29, H-31, H-32, H-36, H-37, H-40, H-41, H-42, H-46, H-47, H-48, H-50, H-57, H-58, H-60, H-66, H-77, H-78, and H-80). Monitoring wells are necessary to monitor the effectiveness of remedial measures. Submittal of a revised groundwater monitoring plan is required in Task 4.a of this Order.

29. Surface Water Monitoring – Surface water monitoring is necessary to evaluate the conditions within Stege Marsh and the effectiveness of remedial measures. Submittal of a surface water monitoring plan is required in Task 4.a of this Order. Surface water monitoring will also be conducted as part of a General Industrial Storm Water Discharge Permit through Industrial and Construction Stormwater Monitoring Plans (NPDES Permit Nos. CAS000001 and CAS000002, respectively).

30. CEQA exemption: This order for Site Cleanup Requirements is exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15321, Title 14 of the California Code of Regulations.

31. Other plans and permits: The discharger is required to implement a soil management plan and to comply with NPDES Industrial and Construction Activity Storm Water permits and a stormwater pollution prevention plan.

32. Public notice: The Board has notified the discharger and interested agencies and persons of its intent to adopt Site Cleanup Requirements for the discharger and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

33. Board hearing: The Board, in a public meeting heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the discharger (or its agents, successors and assigns) shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous substances in a manner which will degrade water quality or adversely affect beneficial uses of waters of the State is prohibited.

2. Further significant migration of wastes or hazardous substances through subsurface transport to waters of the State, and migration of wastes or hazardous substances at levels which may affect human or ecological receptors, is prohibited.

3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of wastes or hazardous substances are prohibited.

B. CLEANUP PLAN AND CLEANUP STANDARDS

1. Implement Cleanup Plan: The discharger shall implement the cleanup plan for the Upland Area of the site described in findings 24 and 25.

2. Groundwater Cleanup Standards for Upland Area: Groundwater SSTLs shall be met for volatile chemicals, metals, pesticides, and and pH for groundwater shall be between 6.0 and 8.5 in all wells identified in the Self-Monitoring Program and any additional wells necessary to monitor the site. Groundwater pollution shall be reduced to levels protective of potential off-site receptors.

3. Soil Cleanup Standards for Upland Area: Concentrations of volatile chemicals in soil shall be reduced to concentrations below the SSTLs as described in Finding 25. Areas where soil contains concentrations of metals exceeding the EPA Region 9 industrial PRG or where neutralized cinders are placed will be capped as described in Finding 24 and 25. Soil pollution shall be reduced to levels protective of potential off-site receptors.

4. Cleanup Standards for Stege Marsh: Soil, sediment, surface water, and groundwater cleanup standards for Eastern Stege Marsh will be established upon completion of the appropriate tasks below.

C. TASKS

CINDERS IMPACTS IN UPLAND AREA OF SUBUNIT 1

1.a. RESULTS OF SOIL AND GROUNDWATER NEUTRALIZATION PILOT TESTS AND METALS TREATMENT TESTS AND REMEDIAL DESIGN DETAILS

COMPLIANCE DATE: January 31, 2002

The discharger shall submit a technical report, acceptable to the Executive Officer, which provides the results of additional bench scale and field

analyses described in the Conceptual Remediation and Risk Management Plan dated November 15, 2000, and the Treatability Study dated December 8, 2000. The report shall include the results of additional treatability studies, soil leachate tests, and field injection tests necessary to complete the design of remedial measures for soil and groundwater pollution associated with cinder fill in MSOU Subunit 1. The report shall also include design details of the remedial measures, including design criteria, construction details, and procedures and schedule for implementation.

1.b **REMEDIAL DESIGN DETAILS FOR THE BIOLOGICALLY ACTIVE PERMEABLE BARRIER**

COMPLIANCE DATE: August 28, 2002

The discharger shall submit a technical report, acceptable to the Executive Officer, which provides the remedial design for the biologically active permeable barrier proposed in the CRRRMP described in Finding 24. The report shall include detailed design criteria, construction details, and procedures and schedule for implementation of the remedial measures. Additional remedial measures, if necessary, shall also be described.

1.c. **IMPLEMENTATION OF SOIL AND GROUNDWATER REMEDIAL MEASURES**

COMPLIANCE DATE: October 31, 2003

The discharger shall submit a technical report, acceptable to the Executive Officer, which documents implementation of the remedial measures for addressing soil and groundwater pollution associated with cinder fill in MSOU Subunit 1, as described in the technical reports described in Tasks 1.a and 1.b. The report shall describe any variances between the remedial design specified in the technical report described in Provision 1.b and the remedial measures actually implemented.

1.d. **WORKPLAN FOR EVALUATING REMEDIAL ACTION EFFECTIVENESS**

COMPLIANCE DATE: January 31, 2004

The discharger shall submit a workplan, acceptable to the Executive Officer, which proposes methods to evaluate the effectiveness of remedial actions addressing pyrite cinders in the Upland Areas of MSOU Subunit 1. The workplan shall evaluate the current field conditions and the groundwater and surface water monitoring program, and recommend new

groundwater monitoring wells, surface water sampling locations, or other confirmation sampling locations. The workplan shall provide for collection and analyses of data sufficient to evaluate remedial action effectiveness 1 year and 3 years after implementation.

1.e. **1-YEAR EVALUATION OF REMEDIAL ACTION EFFECTIVENESS**

COMPLIANCE DATE: January 31, 2005

The discharger shall submit a technical report, acceptable to the Executive Officer, which documents implementation of the workplan specified in Task 1.d. The report shall provide the results of the remedial action evaluation, and if necessary, propose modifications to improve the existing remedial measures or evaluation and implementation of alternative remedial measures.

1.f. **3-YEAR EVALUATION OF REMEDIAL ACTION EFFECTIVENESS**

COMPLIANCE DATE: January 31, 2007 and every 3 years thereafter

The discharger shall submit a technical report, acceptable to the Executive Officer, which documents implementation of the technical report specified in Task 1.d, as necessary to address soil and groundwater pollution within MSOU Subunit 1. The report shall provide the results of the remedial action evaluation, and if necessary, propose modifications to improve the existing remedial measures or evaluation and implementation of alternative remedial measures.

NON-CINDERS IMPACTS IN UPLAND AREA OF SUBUNIT 1

2.a. **REMEDIAL INVESTIGATIONS SUMMARY AND PROPOSAL FOR ADDITIONAL REMEDIAL INVESTIGATIONS**

COMPLIANCE DATE: November 30, 2001

The discharger shall submit a technical report, acceptable to the Executive Officer, which provides a summary and update of all soil and groundwater data for non-cinder impacts to the uplands area of MSOU Subunit 1. The report shall expand upon the findings and conclusions of the Phase II Investigation and the Phase II Investigation Addendum (dated May 31, 2000 and October 25, 2000 respectively) by summarizing and evaluating all previous site data and recently collected site data. Additional soil

and/or groundwater sampling shall be proposed, if necessary, in order to completely define the extent of pollution in MSOU Subunit 1.

2.b. **IMPLEMENTATION OF HOTSPOT REMEDIATION**

COMPLIANCE DATE: April 30, 2002

The discharger shall submit a technical report, acceptable to the Executive Officer, which documents implementation of interim remedial measures addressing the most significant non-cinder related soil and groundwater pollution in the Uplands Area of MSOU Subunit 1. The report shall specify soil and groundwater sampling and monitoring implemented to define lateral and vertical extent of the hotspots.

2.c. **RESULTS OF ADDITIONAL REMEDIAL INVESTIGATIONS**

COMPLIANCE DATE: July, 31, 2002

The discharger shall submit a technical report, if necessary, acceptable to the Executive Officer, which documents any additional soil and/or groundwater investigation necessary to completely define the extent of pollution in MSOU Subunit 1, as described in the technical report specified in Task 2.a.

2.d. **REVISED REMEDIAL ACTION PLAN**

COMPLIANCE DATE: September 30, 2002

The discharger shall submit a technical report, acceptable to the Executive Officer, which provides revisions to the December 8, 2000 Conceptual Remedial and Risk Management Plan and its amendments, as necessary per the findings in technical report described in Task 2.c and an evaluation of the effectiveness of hotspot remedial measures implemented as documented in Task 2.b. The report shall include detailed design criteria, construction details, and procedures and schedule for implementation of the remedial measures.

2.e. **IMPLEMENTATION OF REMEDIAL ACTION PLAN**

COMPLIANCE DATE: June 30, 2003

The discharger shall submit a technical report, acceptable to the Executive Officer, which documents implementation of the remedial measures for addressing soil and groundwater pollution in MSOU Subunit 1, as described in the technical report described in Task 2.d. The report shall

describe any variances between the remedial design specified in the technical report described in Provision 2.d and the remedial measures actually implemented.

2.f. **WORKPLAN FOR EVALUATING REMEDIAL ACTION EFFECTIVENESS**

COMPLIANCE DATE: August 31, 2003

The discharger shall submit a workplan, acceptable to the Executive Officer, which proposes methods to evaluate the effectiveness of remedial actions implemented within MSOU Subunit1. The report shall evaluate the current field conditions and the groundwater and surface water monitoring program, and recommend new groundwater monitoring wells, surface water sampling locations, or other confirmation sampling locations. The report shall provide for collection and analyses of data sufficient to evaluate remedial action effectiveness 1 year and 3 years after implementation.

2.g. **1-YEAR EVALUATION OF REMEDIAL ACTION EFFECTIVENESS**

COMPLIANCE DATE: August 31, 2004

The discharger shall submit a technical report, acceptable to the Executive Officer, which documents implementation of the technical report specified in Task 2.f, as necessary to address noncinder-associated soil and groundwater pollution within MSOU subunit 1. The report shall provide the results of the remedial action evaluation, and if necessary, propose modifications to improve the existing remedial measures or evaluation and implementation of alternative remedial measures.

2. h. **3-YEAR EVALUATION OF REMEDIAL ACTION EFFECTIVENESS**

COMPLIANCE DATE: August 31, 2006 and every 3 years thereafter

The discharger shall submit a technical report, acceptable to the Executive Officer, which documents implementation of the technical report specified in Task 2.f, as necessary to address noncinder-associated soil and groundwater pollution within MSOU subunit 1. The report shall provide the results of the remedial action evaluation, and if necessary, propose modifications to improve the existing remedial measures or evaluation and implementation of alternative remedial measures.

EASTERN STEGE MARSH AREA OF SUBUNIT 1

3a. HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

COMPLIANCE DATE: February 28, 2002

The discharger shall submit a technical report, acceptable to the Executive Officer, which documents the results of the risk assessment for Eastern Stege Marsh. The risk assessment must present Tier 2 site-specific target levels for human health and ecological receptors that have been identified at the site. Both direct toxicity and bioaccumulative impacts must be evaluated and considered in the development of the ecological SSTLs. Based on the results of the risk assessment, areas of concern must be identified and presented in the report.

3.b. CONCEPTUAL REMEDIAL ACTION PLAN

COMPLIANCE DATE: July 31, 2002

The discharger shall submit a technical report, acceptable to the Executive Officer, which provides a conceptual remedial action plan for addressing sediment, pore water, and surface water contamination within Stege Marsh. The conceptual remedial measures shall be protective of water quality and human and ecological receptors. A site conceptual model shall be provided in the technical report. The report shall also consider all existing sampling data for the marshland and propose additional sampling if necessary.

3.c. REMEDIAL ACTION PLAN DESIGN DETAILS AND RISK MANAGEMENT PLAN

COMPLIANCE DATE: March 31, 2003

The discharger shall submit a technical report, acceptable to the Executive Officer, which provides design details of remedial measures for Stege Marsh, as described in Task 3.b. The report shall include detailed design criteria, construction details, and procedures and schedule for implementation of the remedial measures.

3.d. IMPLEMENTATION OF REMEDIAL ACTION PLAN

COMPLIANCE DATE: March 31, 2004

The discharger shall submit a technical report, acceptable to the Executive Officer, which documents implementation of the remedial measures for addressing pollution within Stege Marsh, as proposed in Task 3.b. The report shall describe any variances between the remedial design specified in the technical report described in Task 3.b (Remedial Action Plan) and the remedial measures actually implemented.

3.e. **WORKPLAN FOR EVALUATING REMEDIAL ACTION EFFECTIVENESS**

COMPLIANCE DATE: April 30, 2004

The discharger shall submit a technical report, acceptable to the Executive Officer, which proposes methods to evaluate the effectiveness of remedial actions implemented within Stege Marsh in MSOU Subunit1. The report shall evaluate the current field conditions and the existing monitoring program, and recommend new surface water and sediment confirmation sampling locations. The report shall provide for collection and analyses of data sufficient to evaluate remedial action effectiveness 1 year and 3 years after implementation.

3.f. **1-YEAR EVALUATION OF REMEDIAL ACTION EFFECTIVENESS**

COMPLIANCE DATE: April 30, 2005

The discharger shall submit a technical report, acceptable to the Executive Officer, which documents implementation of the technical report specified in Task 3.d, as necessary to address pollution within Stege Marsh in MSOU subunit 1. The report shall provide the results of the remedial action evaluation, and if necessary, propose modifications to improve the existing remedial measures or evaluation and implementation of alternative remedial measures.

3.g. **3-YEAR EVALUATION OF REMEDIAL ACTION EFFECTIVENESS**

COMPLIANCE DATE: April 30, 2007 and every 3 years thereafter

The discharger shall submit a technical report, acceptable to the Executive Officer, which documents implementation of the technical report specified in Task 3.d, as necessary to address pollution within Stege Marsh in MSOU subunit 1. The report shall provide the results of the remedial action evaluation, and if necessary, propose modifications to improve the

existing remedial measures or evaluation and implementation of alternative remedial measures.

MONITORING REPORTS

4.a. REVISED WATER QUALITY MONITORING PLAN

COMPLIANCE DATE: October 31, 2001

The dischargers shall submit a technical report, acceptable to the Executive Officer, which proposes water quality monitoring necessary to monitor the extent of groundwater and surface water contamination and evaluate the effectiveness of site cleanup. The workplan shall specify at a minimum, well location, well construction, surface water locations, sampling methods, and quality assurance controls. The discharger shall propose sampling frequency, methodology, and parameters, and laboratory analytical methods.

4.b. WELL INSTALLATION REPORT

COMPLIANCE DATE: 45 days following completion of well installation activities

The discharger shall submit a technical report, acceptable to the Executive Officer, that provides well construction details, geologic boring logs, and well development logs for all new wells installed as part of the present or future Self Monitoring Program (Attachment A).

SITE MAINTANENCE

5.a. CHANGE IN SITE CONDITIONS

NOTIFICATION DUE DATE: Immediately upon occurrence
REPORTING DUE DATE: 30 days after initial notification

Except as provided for in the soil management plan for future construction activities, the discharger shall immediately notify the Board of any flooding, ponding, settlement, equipment failure, slope failure, exposure of waste, or other change in site conditions that could impair the integrity of the site cap and/or drainage control structures and shall immediately make repairs. Within 30 days, the discharger shall prepare and submit a technical report, acceptable to the Executive Officer, documenting the corrective measures taken.

5.b. **STORMWATER CONTROL PLANS**

COMPLIANCE DATE: October 15 of the year of construction or prior to construction if commencing between October 15 and May 15

For each proposed development greater than 1 acre in size, the discharger shall submit a Notice of Intent to the State Water Resources Control Board, prepare and submit a Storm Water Pollution Prevention Plan acceptable to the Executive Officer, and implement Best Management Practices (BMPs) for the control of storm water, in accordance with requirements specified in the State Water Resources Control Board General Permit for Storm Water Discharges Associated with Construction Activities (NPDES Permit No. CAS000002).

SITE DEVELOPMENT

6.a. **DRAFT DEED RESTRICTION**

COMPLIANCE DATE: December 31, 2002

The discharger shall submit a draft deed restriction, acceptable to the Executive Officer, which prevents and minimizes activities at the site which may exacerbate water quality impacts or which may result in exposure of human or ecological receptors to soil and/or groundwater contamination above appropriate risk levels at the site. The deed restriction must also provide a mechanism for the appropriate notification of on-site utility, maintenance, or construction workers of environmental hazards and prevent the use of significantly impacted soil and groundwater, except in accordance with the soils management plans prepared by the discharger.

6.b. **RECORDING OF DEED RESTRICTION**

COMPLIANCE DATE: March 31, 2003

The discharger shall submit documentation showing that an approved deed restriction, resulting from Task 6.a. was recorded as final.

6.c. **POST- REMEDIATION DEVELOPMENT DESIGN**

COMPLIANCE DATE: 120 days prior to commencement of construction

The discharger or subsequent owner shall prepare and submit a technical report, acceptable to the Executive Officer, for any significant development or redevelopment project proposed for Subunit 1. The technical report shall describe the project, identify key components of the design that may impact Subunit 1, and specify how the components are consistent with maintaining the site cap and preventing water quality impacts.

6.d. **CHANGES TO POST- REMEDIATION DEVELOPMENT DESIGN**

COMPLIANCE DATE: 120 days prior to commencement of construction

The discharger or subsequent owner shall prepare and submit a technical report, acceptable to the Executive Officer, describing proposed changes to site development or redevelopment projects for Subunit 1. The technical report shall describe the project, identify key changes to the design which may impact the Subunit 1, and specify how the changes are consistent with maintaining the integrity of the site cap and preventing water quality impacts.

7. **FINANCIAL ASSURANCE INSTRUMENT**

COMPLIANCE DATE: October 31, 2001

The discharger shall obtain and maintain a Financial Assurance Instrument or provide a corporate guarantee, acceptable to the Executive Officer, which provides coverage of costs of meeting the Tasks of this Order. For the purpose of establishing the fund amount, the discharger shall assume a monitoring and maintenance period of 20 years after implementation of remedial actions. However, the monitoring and maintenance period shall extend as long as the water quality in Subunit 1 is threatened.

D. PROVISIONS

1. Contractor/consultant qualifications: All hydrogeological plans, specifications, technical reports and documents shall be signed by or stamped with the seal of a State registered geologist, registered engineer, registered hydrogeologist, or certified engineering geologist.

2. Lab qualifications: All samples shall be analyzed by a State certified laboratory or laboratory accepted by the Regional Board using approved EPA methods for the type of analysis to be performed. All laboratories or the consultant shall be required to maintain quality assurance/quality control records for Regional Board review.

3. Good operation and maintenance (O&M): The Discharger shall maintain in good working order, and operate in the normal standard of care, any facility or control system installed to achieve compliance with the requirements of this Order.

4. Document distribution: Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions and Provisions of this Order shall also be provided to (a) the non-lead discharger for the specific provision or activity. The Executive Officer may modify this distribution list as needed.

5. Delayed compliance: If the discharger is delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the above tasks, the discharger shall promptly notify the Executive Officer and the Board may consider revisions to this Order.

6. Access to site and records: The discharger shall permit the Regional Board or its authorized representative, upon presentation of credentials:

   a. Immediate entry upon the premises on which wastes are located or in which any required records are kept.
   b. Access to copy any records required under the terms and conditions of this order.
   c. Inspection of any treatment equipment, monitoring equipment, or monitoring methods required by this order or by any other California State Agency.
   d. Sampling of any discharge or groundwater governed by this order.

7 Reporting of changed owner or operator: The discharger shall file a technical report on any changes in site occupancy or ownership associated with the property described in this Order.

8. Reporting of hazardous substance release: If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, the discharger shall report such discharge to the Regional Board by calling (510) 622-2343 during regular office hours (Monday through Friday, 8:00 am to 5:00 pm). A written report shall be filed with the Board within five working days. The report shall describe: the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified. This reporting is in addition to

reporting to the Office of Emergency Services required pursuant to the Health and Safety Code.

9. Reporting and correction of non-compliance: The discharger shall report any noncompliance that may endanger public health or the environment. Any such information shall be provided orally to the Executive officer within 24 hours from the time the discharger becomes aware of the circumstances. A written submission shall also be provided within five days of the time the discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Executive Officer, or an authorized representative, may waive the written report on a case-by-case basis if the oral report has been received within 24 hours [CWC Sections 13263 and 13267].

10. Cost recovery: The Discharger shall be liable, pursuant to Section 13304 of the California Water Code, to the Board for all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial actions, required by this Order. If the Dischargers addressed by this Order are enrolled in a State Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to procedures established in that program. Any disputes raised by discharger(s) over the reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures of that program.

11. Periodic SCR review: The Board will review this Order periodically and may revise it when necessary. The discharger may request revisions and upon review the Executive Officer may recommend that the Board revise these requirements.

12. Self Monitoring Program: The discharger shall comply with the Self Monitoring Plan as attached to this Order and as may be amended by the Executive Officer.

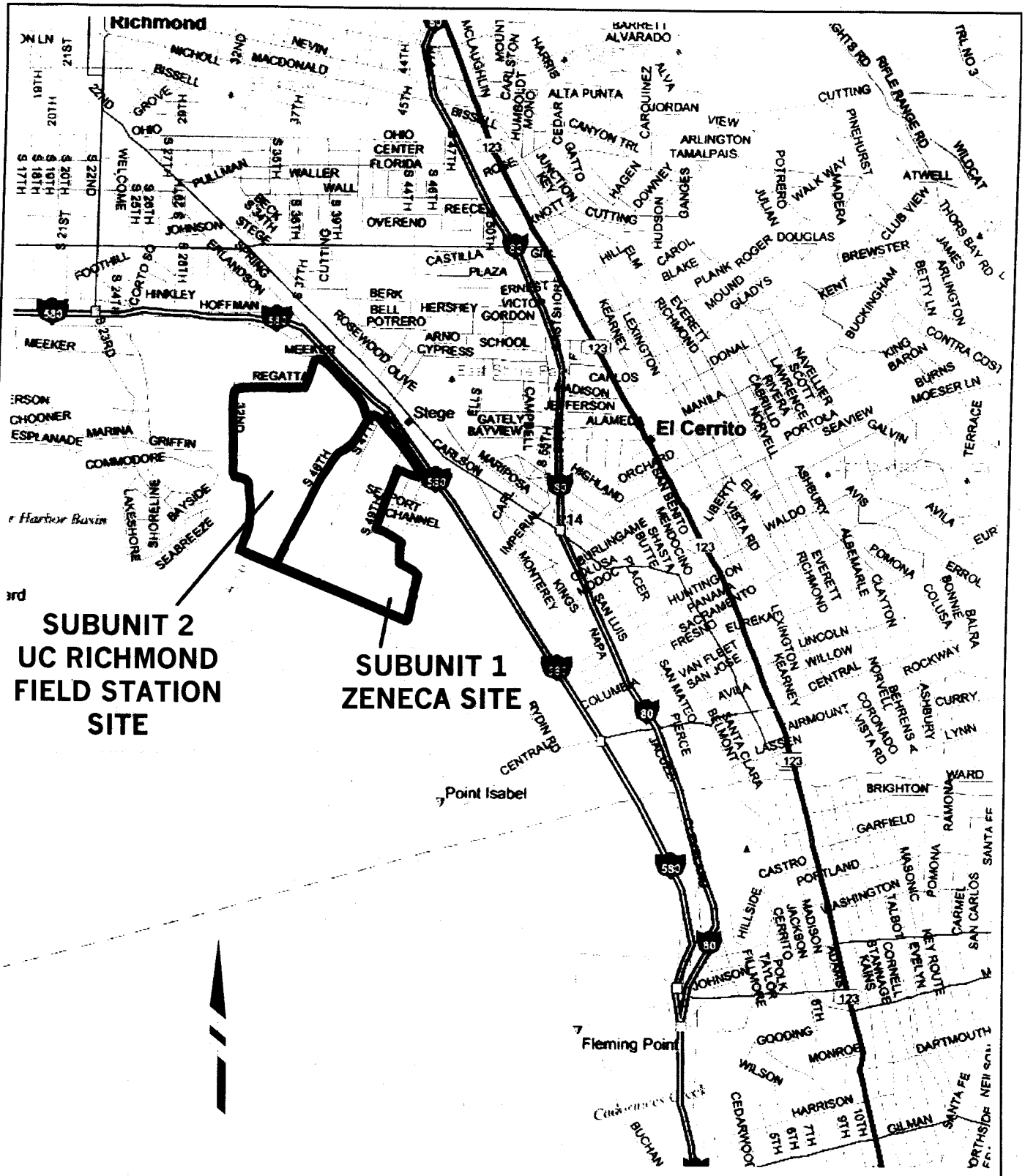
I, Loretta K. Barsamian, Executive Officer, do hereby certify that the foregoing is a full, complete, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on September 19, 2001.

Loretta K. Barsamian
Executive Officer

Figures: Figure 1 - Site Location Map
Figure 2 - Subunit 1, MSOU

Attachment: Self Monitoring Plan

FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS ORDER MAY SUBJECT YOU TO ENFORCEMENT ACTION, INCLUDING BUT NOT LIMITED TO IMPOSITION OF ADMINISTRATIVE CIVIL LIABILITY UNDER WATER CODE SECTIONS 13268 OR 13350, OR REFERRAL TO THE ATTORNEY GENERAL FOR INJUNCTIVE RELIF OR CIVIL CRIMINAL LIABILITY



SOURCE: DeLORME STREET ATLAS USA VERSION 6.0

J:\ENGCAD\7545\LFRDWGS\7545SV100.CDR 122799

FIGURE 1
LOCATION MAP

MEADE STREET OPERABLE UNIT
AND SUBUNITS

RICHMOND, CONTRA COSTA COUNTY

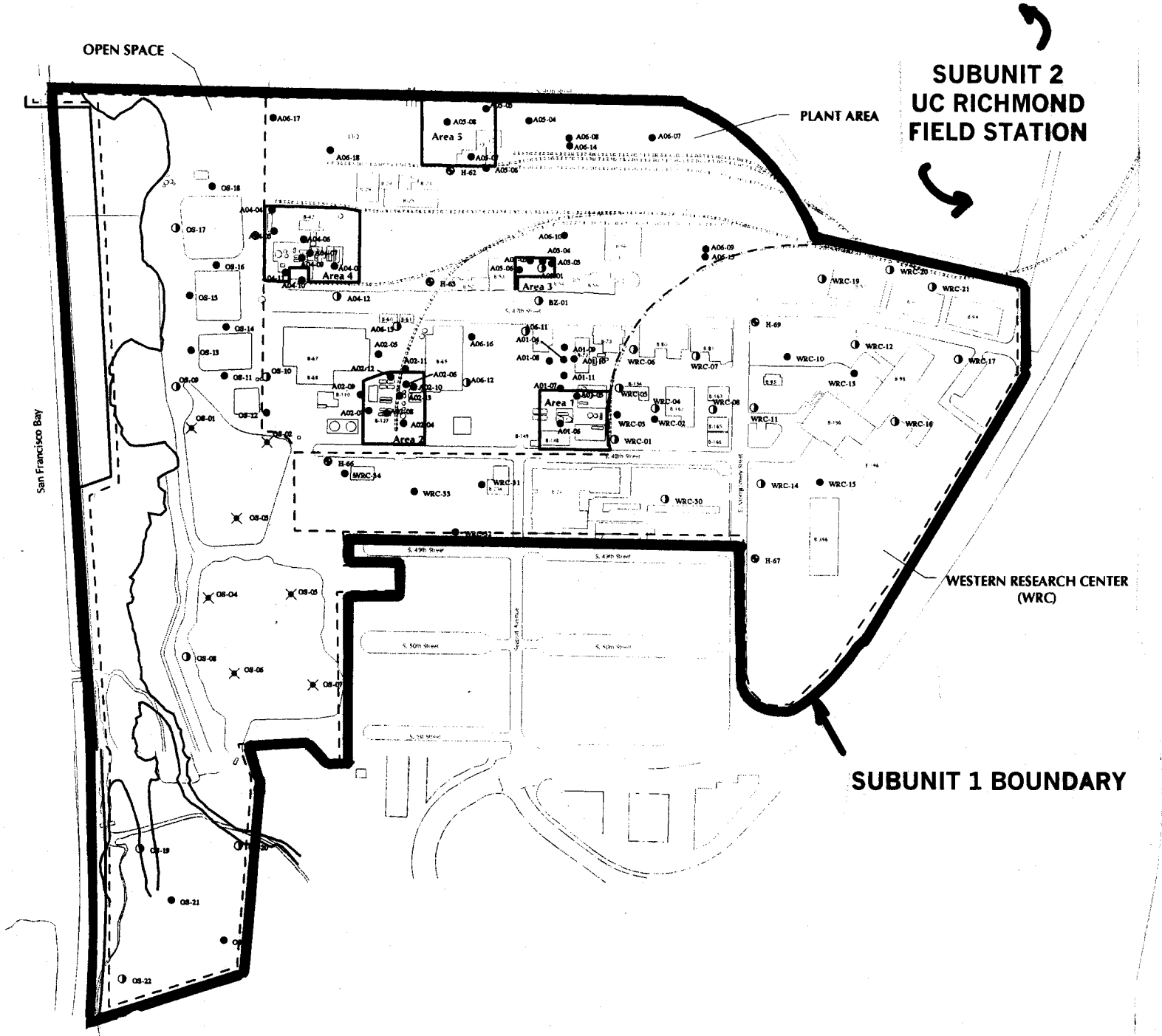


FIGURE 2
SITE MAP

SUBUNIT 1
ZENECA SITE

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM FOR:

ZENECA, INC.

1415 SOUTH 47th STREET
RICHMOND
CONTRA COSTA COUNTY

MEADE STREET OPERABLE UNIT
SUBUNIT 1

1. **Authority and Purpose**: The Board requests the technical reports required in this Self-Monitoring Program pursuant to Water Code Sections 13267 and 13304. This Self-Monitoring Program is intended to document compliance with Board Order No. 01-101 (site cleanup requirements).

2. **Groundwater and Surface Water Monitoring**: The discharger shall measure groundwater elevations quarterly in all monitoring wells, and shall collect and analyze representative samples of groundwater and surface water according to the following table: (Groundwater monitoring wells and surface water sample locations are to be proposed by the discharger in accordance with Task 4.c of this Order.)

Well # or Station #	Sampling Frequency	Analyses	Well # or Station #	Sampling Frequency	Analyses
TBP	quarterly	TBP	TBP	quarterly	TBP
TBP	quarterly	TBP	TBP	quarterly	TBP
TBP	quarterly	TBP	TBP	quarterly	TBP
TBP	quarterly	TBP	TBP	quarterly	TBP
TBP	quarterly	TBP	TBP	quarterly	TBP

TBP: To Be Proposed by Discharger per Task 4.c

The discharger shall sample any new monitoring or extraction wells quarterly and analyze groundwater samples for the same constituents as shown in the above table. The discharger may propose changes in the above table; any proposed changes are subject to Executive Officer approval.

3. **Quarterly Monitoring Reports**: The discharger shall submit quarterly monitoring reports to the Board no later than 30 days following the end of the quarter (e.g. report for first quarter of the year due April 30). The first required quarterly monitoring report shall be due on January 31, 2002. Additional quarterly reports shall comply with the following schedule.

Quarter	**Months Covered**	**Report Due Date**
First Quarter	January, February, March	April 30th
Second Quarter	April. May, June	July 31st
Third Quarter	July, August, September	October 30th
Fourth Quarter	October, November, December	January 31st

Each quarterly report shall include:

a. Transmittal Letter: The transmittal letter shall identify and discuss any violations of the Order and/or the Self-Monitoring Program during the reporting period and actions taken or planned to correct the problem. A detailed description of the violation and the actions taken or planned to correct the violation shall be further described in the body of the monitoring report. The letter shall be signed by the discharger's principal executive officer or his/her duly authorized representative, and shall include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.

b. Groundwater Elevations: Groundwater elevation data shall be presented in tabular form, and a groundwater elevation map shall be prepared for each monitored water-bearing zone. Historical groundwater elevations shall be included in the fourth quarterly report each year.

c. Groundwater Analyses: Groundwater sampling data shall be presented in tabular form, and an isoconcentration map should be prepared for one or more key contaminants for each monitored water-bearing zone, as appropriate. The report shall indicate the analytical method used, detection limits obtained for each reported constituent, and a summary of QA/QC data. Historical groundwater sampling results shall be included in the fourth quarterly report each year. The report shall describe any significant increases in contaminant concentrations since the last report, and any measures proposed to address the increases. Supporting data, such as lab data sheets, need not be included (however, see record keeping - below).

d. Groundwater Extraction: If applicable, the report shall include groundwater extraction results in tabular form, for each extraction well and for the site as a whole, expressed in gallons per minute and total groundwater volume for the quarter. The report shall also include contaminant removal results, from groundwater extraction wells and from other remediation systems (e.g. soil vapor extraction), expressed in units of chemical mass per day and mass for the quarter. Historical mass removal results shall be included in the fourth quarterly report each year.

e. Status Report: The quarterly report shall describe relevant work completed during the reporting period (e.g. site investigation, interim remedial measures) and work planned for the following quarter.

4. **Violation Reports**: If the discharger violates requirements in the Site Cleanup Requirements, then the discharger shall notify the Board office by telephone as soon as practicable once the discharger has knowledge of the violation. Board

staff may, depending on violation severity, require the discharger to submit a separate technical report on the violation within five working days of telephone notification.

5. **Other Reports**: The discharger shall notify the Board in writing prior to any site activities, such as construction or underground tank removal, which have the potential to cause further migration of contaminants or which would provide new opportunities for site investigation.

6. **Record Keeping**: The discharger or his/her agent shall retain data generated for the above reports, including lab results and QA/QC data, for a minimum of six years after origination and shall make them available to the Board upon request.

7. **SMP Revisions**: Revisions to the Self-Monitoring Program may be ordered by the Executive Officer, either on his/her own initiative or at the request of the discharger. Prior to making SMP revisions, the Executive Officer will consider the burden, including costs, of associated self-monitoring reports relative to the benefits to be obtained from these reports.

I, Loretta K. Barsamian, Executive Officer, hereby certify that this Self-Monitoring Program was adopted by the Board on September 19, 2001.

Loretta K. Barsamian
Executive Officer

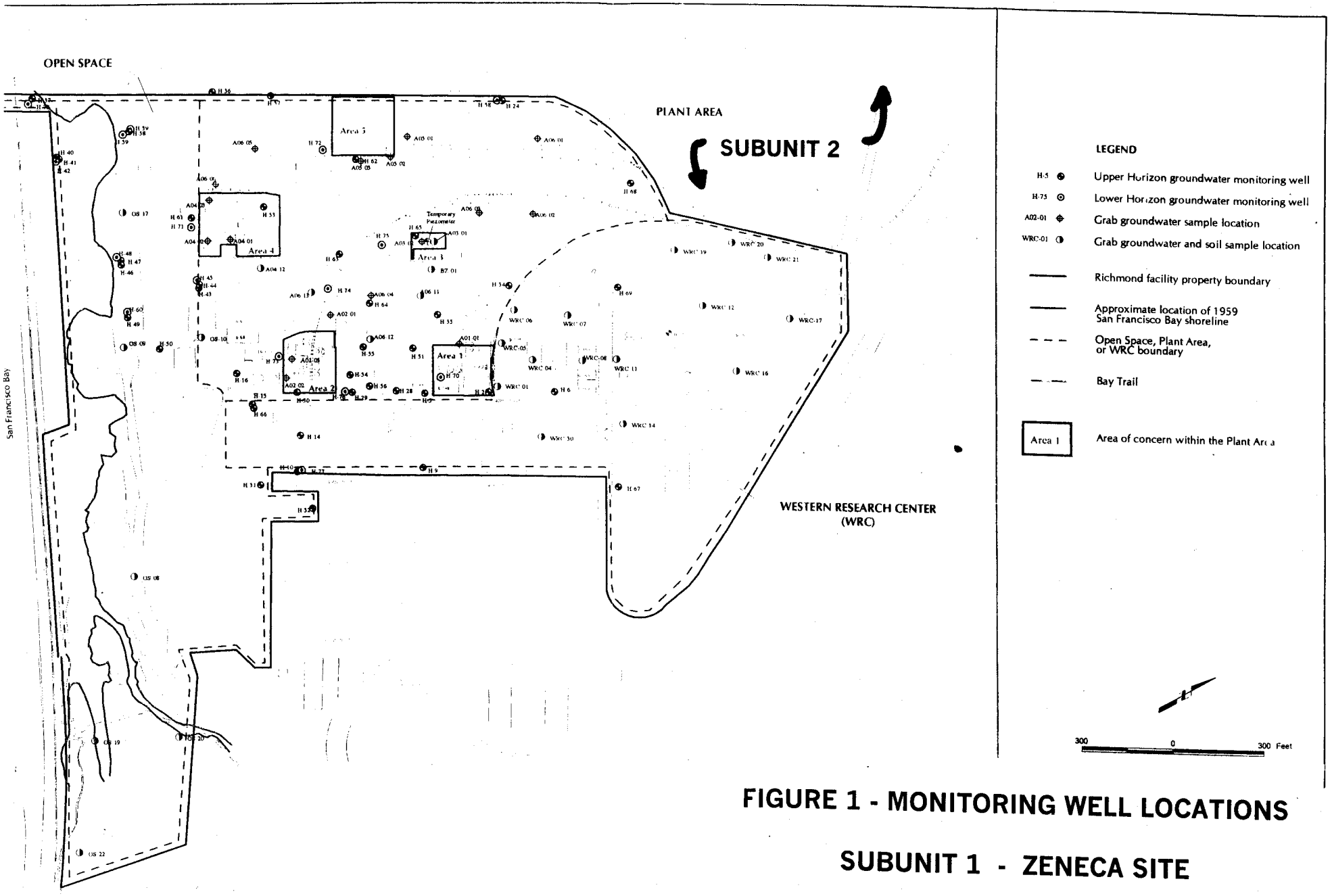


FIGURE 1 - MONITORING WELL LOCATIONS

SUBUNIT 1 - ZENECA SITE